

NONROAD ENGINE FAMILY BOXES

The engine family boxes shown below represent groupings of engine families with similar characteristics (i.e., the emissions standards that the engines were built to) for current and past model years. The boxes were grouped by the rated power categories and effective model years (for the emission standards). The number of engine families for each box were tabulated from an EPA engine certification database.

EPA considers this framework of engine family boxes to be a guideline only. Manufacturers may demonstrate the appropriateness of extending or limiting the applicability of data, on a case by case basis. EPA will consider analyses based on good engineering judgment and the submission of additional data may, or may not, be required.

<div>NR1 (< 8 kW)</div> <div>TIER 1</div> <div>MY 2000-2002</div> <table><tr><td></td><td></td></tr><tr><td>CO:</td><td>8.00</td></tr><tr><td>HC+NOx:</td><td>10.50</td></tr><tr><td>PM:</td><td>1.00</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>54</td></tr></table>			CO:	8.00	HC+NOx:	10.50	PM:	1.00			No. Of Families:	54	<div>NR2 (8 < kW < 19)</div> <div>TIER 1</div> <div>MY 2000-2002</div> <table><tr><td></td><td></td></tr><tr><td>CO:</td><td>6.60</td></tr><tr><td>HC+NOx:</td><td>9.50</td></tr><tr><td>PM:</td><td>0.80</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>124</td></tr></table>			CO:	6.60	HC+NOx:	9.50	PM:	0.80			No. Of Families:	124	<div>NR3 (19 ≤ kW < 37)</div> <div>TIER 1</div> <div>MY 1999-2002</div> <table><tr><td></td><td></td></tr><tr><td>CO:</td><td>5.50</td></tr><tr><td>HC+NOx:</td><td>9.50</td></tr><tr><td>PM:</td><td>0.80</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>316</td></tr></table>			CO:	5.50	HC+NOx:	9.50	PM:	0.80			No. Of Families:	316
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<div>NR1 (< 8 kW)</div> <div>PRE MY 2000*</div>	<div>NR2 (8 ≤ kW < 19)</div> <div>PRE MY 2000*</div>	<div>NR3 (19 ≤ kW < 37)</div> <div>PRE MY 1999*</div>																																				
<div>NR4 (37 ≤ kW < 75)</div> <div>TIER 1</div> <div>MY 1998-2002</div> <table><tr><td>HC:</td><td>--</td></tr><tr><td>CO:</td><td>--</td></tr><tr><td>NOx:</td><td>9.20</td></tr><tr><td>PM:</td><td>--</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>666</td></tr></table>	HC:	--	CO:	--	NOx:	9.20	PM:	--			No. Of Families:	666	<div>NR5 (75 ≤ kW < 130)</div> <div>TIER 1</div> <div>MY 1997-2002</div> <table><tr><td>HC:</td><td>--</td></tr><tr><td>CO:</td><td>--</td></tr><tr><td>NOx:</td><td>9.20</td></tr><tr><td>PM:</td><td>--</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>432</td></tr></table>	HC:	--	CO:	--	NOx:	9.20	PM:	--			No. Of Families:	432	<div>NR6 (130 ≤ kW < 225)</div> <div>TIER 1</div> <div>MY 1996-2002</div> <table><tr><td>HC:</td><td>1.30</td></tr><tr><td>CO:</td><td>11.40</td></tr><tr><td>NOx:</td><td>9.20</td></tr><tr><td>PM:</td><td>0.54</td></tr><tr><td></td><td></td></tr><tr><td>No. Of Families:</td><td>688</td></tr></table>	HC:	1.30	CO:	11.40	NOx:	9.20	PM:	0.54			No. Of Families:	688
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<div>NR4 (37 ≤ kW < 75)</div> <div>PRE MY 1998*</div>	<div>NR5 (75 ≤ kW < 130)</div> <div>PRE MY 1997*</div>	<div>NR6 (130 ≤ kW < 225)</div> <div>PRE MY 1996*</div>																																				

NONROAD ENGINE FAMILY BOXES (Continued)

NR7 (225 ≤ kW < 450)	
TIER 1	
MY 1996-2000	
HC:	1.30
CO:	11.40
NOx:	9.20
PM:	0.54
No. Of Families:	392

NR7**T2(225≤kW<450)	
TIER 2	
MY 2001-2002	
CO:	3.50
HC+NOx:	6.40
PM:	0.20
No. Of Families:	67

NR8 (450 ≤ kW ≤ 560)	
TIER 1	
MY 1996-2001	
HC:	1.30
CO:	11.40
NOx:	9.20
PM:	0.54
No. Of Families:	109

NR7 (225 ≤ kW < 450)	
PRE MY 1996*	

NR8 (450 ≤ kW ≤ 560)	
PRE MY 1996*	

NR8**T2 (450≤kW≤560)	
TIER 2	
MY 2002	
CO:	3.50
HC+NOx:	6.40
PM:	0.20
No. Of Families:	0

NR9 (> 560 kW)	
TIER 1	
MY 2000-2002	
HC:	1.30
CO:	11.40
NOx:	9.20
PM:	0.54
No. Of Families:	91

POWER EQUIVALENTS:

kW	hp
8	10.7
19	25.5
37	49.6
75	100.5
130	174.2
225	301.5
450	603.0
560	750.4

NR9 (> 560 kW)	
PRE MY 2000*	

NOTE:

- * Although emission standards did not exist for pre regulated engine families, emission standard predictions can be sought with nonroad modeling software. EPA/OTAQ staff shall discuss with the retrofit manufacturer to determine the applicability of the retrofit device to non-regulated engine families also on a case-by-case basis.